Baltimore Harbor TMDL Stakeholder Advisory Group (SAG)
July 29, 2003 Meeting Minutes

Maryland Department of the Environment
Montgomery Park
Baltimore, Maryland
1:00 – 4:00

Overview:

The meeting consisted of presentations by the Maryland Department of the Environment on the nutrients modeling effort currently undertaken by the agency. An update was also given to inform SAG members of the effort MDE will undertake to verify the chromium impairments in the Harbor.

Presentations

Water Quality Endpoints (Miao - Li Chang)

Goal: Provide an overview of how MDE will apply the new interpretation of water quality criteria developed by the Chesapeake Bay Program (CBP) to the Baltimore Harbor and Back River watersheds.

Application of CBP Proposed Water Quality Criteria to Baltimore Harbor

- Dissolved Oxygen – Based on the CBP criteria interpretation, the Harbor and Back River were segregated based upon the presence of a stratified water column during warm weather months. The presentation provides a detailed assessment of which areas within the water column are subject to various minimum DO requirements throughout the year.
- Chlorophyll *a* – MDE will be implementing the existing narrative criteria by using a numerical interpretation to maintain Chl *a* concentrations <50μg/l.

Discussion

It was suggested that MDE might want to adjust the nomenclature associated with the DO thresholds in the presentation. The DO threshold designations are the same as current Maryland water quality use designations and may provide a potential source of confusion among stakeholders.

Eutrophication Model Calibration (Miao - Li Chang)

Goal: Provide an overview of the eutrophication model calibration parameters and results

Model Calibration

- Results were presented for DO, Chl *a*, TN, and TP to represent the performance of the model. The eutrophication model has been reviewed by Baltimore City, Baltimore County, several state agencies and the CBP modeling subcommittee prior to presentation to the SAG – in all cases the response has been positive.
- An explanation was presented that indicated how Back River sediments affected the release of nutrients into the water column due to the flux of nutrients out of sediments in high pH conditions.
- MDE is comfortable with the results of the calibration and consider the external review process of the calibration complete. However, if anyone would like further information regarding the calibration, feel free to contact the agency.

Discussion

The discussion covered several topics including the influence of sediment oxygen demand on the calibration, the future collection of nutrients data by the Department of Natural Resources, and the potential explanations/implications of high Chl *a* levels and relatively low impact they appeared to have on dissolved oxygen levels in the Back River.

Eutrophication Model Scenario Run (Miao-Li Chang)

Goal: Provide overview of the results generated by the MDE eutrophication model using the proposed CBP allocations (point, nonpoint, atmospheric, etc.) as inputs. This scenario will allow MDE to evaluate if the proposed allocations to the Patapsco and Back River watersheds will protect local water quality.

Scenario Run Update

- The results indicate:
    - **Back River** Chlorophyll *a* values are below the goal of 50 µg/l in the stations located in the middle and at the mouth of the river and above the goal of 50 µg/l (100 – 150µg/l) in two stations located in the upper part of the river.Dissolved oxygen values are above the criteria at all stations during all times of the year.
    - **Baltimore Harbor**
        - Chlorophyll *a* values are below the goal of 50 µg/l at all stations during all times of the year.
        - Dissolved oxygen values indicate non-attainment in the bottom layers throughout the Middle Harbor, the Inner Harbor, the Middle Branch, and in several Curtis Creek stations.

- Implications – Based on model results indicating that the nutrient allocations to the Patapsco/Back River Tributary Strategy basin will not result in the Back River and Baltimore Harbor achieving local water quality standards, further scenarios will need to be run to determine the appropriate nutrient allocations.

Discussion

The discussion focused on several topics including; the nonpoint source load variations between CBP and MDE watershed models, the factors affecting the sediment flux and re-suspension, how the Back River can have high Chl *a* and also high DO, the effect of residual carbon in the DO response in areas of the Harbor and Back River, the potential influence of low DO Bay water on the Harbor deep channel, and how the future scenario runs that will be run will address the various issues discussed during the meeting.
The issue of schedule was discussed. MDE will continue with its effort to finalize the modeling effort within two months. Additionally, MDE is in discussions with EPA Region 3 regarding the submittal schedule.

Chromium TMDL Update

- MDE is preparing to verify that the toxic form of chromium – Cr^6 –is present in the sediments of the Harbor. Environmental conditions that favor the presence of the less-toxic form, Cr^3, might predominate.
- MDE is going to conduct field sampling and laboratory analyses in August to verify the chromium impairment in Bear Creek and the Inner Harbor/Northwest Branch.
- MDE will collect samples of bulk sediment, pore water, and overlying water column to determine if Cr^6 is present in the pore water at levels above the water column criteria, therefore indicating impairment.

- Implications: The lab analyses data from the August field effort are expected in October. These will be considered in a reassessment of the chromium impairments in the Harbor.

Discussion

The discussion focused around the original listing criteria, the ability of Cr^3 to convert to Cr^6, and the long term potential for Cr^3 to convert to Cr^6 given the expected increase in DO in the Harbor with the implementation of the nutrients TMDL. Other issues included researching the potential conversion from Cr^6 to Cr^3 based on releases from the former Allied Signal facility and a potential spill site in the Harbor that requires further investigation to locate. Further discussion focused on what specific parameters should be analyzed during the August field effort.

The lead and zinc TMDLs will continue to be developed as originally scheduled; the results of the fieldwork will be used to bolster the lead and zinc TMDL effort.

Next Steps

1) MDE will consider changing the names of the different DO thresholds to avoid confusion with current designated use classifications.
2) MDE will continue to develop nutrient scenario runs to determine the nutrient allocation level consistent with attaining local water quality standards.
3) MDE will proceed with a field study to verify the chromium impairment in the Harbor.
4) MDE will assess the Chl *a*/DO relationship in Back River to ensure that the model is functioning properly.
5) MDE will assess the relative effects of the sediment oxygen demand, and external (Bay) sources of low DO, on the DO in the Harbor.
6) MDE will develop a more clear explanation of the CBP load allocations implemented via MDE's modeling framework

Scheduled Meetings: All Meetings Scheduled to be held at the MDE offices at Montgomery Park

October 29, 2003 (1:00 – 4:00)

A meeting may be schedule prior to October if it is deemed necessary to provide stakeholders with information critical to the process.